

Appln. S.N. 10/691,199
Amdt. dated February 28, 2007
Reply to Office Action of November 30, 2006
Docket No. 100204895-1

10

REMARKS

The Office Action of November 30, 2006 has been received and carefully reviewed. It is submitted that, by this Amendment, all bases of rejection and objection are traversed and overcome. Upon entry of this Amendment, claims 1-33 and 44-46 remain in the application. Claims 34-43 are cancelled herein. Reconsideration of the claims is respectfully requested.

The specification stands objected to because, according to the Examiner, the "title of the invention is not descriptive." The Examiner states that a new title is required that is clearly indicative of the invention to which the claims are directed.

Although Applicants do not acquiesce to this objection, Applicants have amended the title to recite "method of making porous cermet and ceramic films." As such, it is submitted that the objection to the specification has been obviated.

Claim 21 stands objected to because it recites the word "lest" instead of "least". Applicants have amended claim 21 to correct the typographical error, and as such, respectfully submit that the objection to claim 21 has been obviated.

Claims 1-33 and 44-46 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and claim the subject matter which the Applicants regard as the invention. The Examiner's particular rejections regarding specific claims are addressed below under separate headings.

35 U.S.C. § 112, second paragraph rejection of Claim 1

Regarding claim 1, the Examiner states that the term "mobile metal" is vague and confusing. The Examiner requests clarification of whether the mobile metal is part of the co-deposition process. He further states that the phrase "causing a mobile metal to diffuse to at least one of a cermet film surface and a ceramic film surface" is deemed vague and confusing, and requests clarification.

Applicants do not acquiesce to the Examiner's assertion that the term "mobile metal" is vague and confusing. Applicants' specification as filed explains that the mobile

Appln. S.N. 10/691,199
Amdt. dated February 28, 2007
Reply to Office Action of November 30, 2006
Docket No. 100204895-1

11

metal M is the metal 12 within the cermet or ceramic film that diffuses to the surface of the film and/or reduces within the film when exposed to certain conditions (see Applicants' specification as filed, at least at page 4, lines 3-9). Applicants further disclose in the specification as filed that generally all metals are mobile (see page 6, lines 17-18), and that the deposited metal may be initially highly mobile, or may be rendered more mobile (see page 4, lines 6-7). As such, the co-deposited metal (which, in addition to the ceramic 14, forms the cermet or ceramic film) includes the mobile metal or includes a metal that can be rendered more mobile.

Although Applicants do not agree that the term "mobile metal" is vague and confusing, in order to expedite prosecution, Applicants have amended claim 1 to recite "wherein the co-deposited metal is the source of the mobile metal." This recitation is supported by the specification (at least at page 4, lines 3-9) and drawings (at least Figs. 1, 2, 3A and 3B) as filed.

Applicants also disagree that the phrase "causing a mobile metal to diffuse to at least one of a cermet film surface and a ceramic film surface" is vague and confusing. It is clear from the claim language that this phrase is not referring to the co-depositing step. As recited in claim 1, co-depositing the metal and the ceramic on a substrate forms the ceramic or cermet film from which the mobile metal is caused to diffuse. It is submitted that claim 1 is clear that the cermet or ceramic film is formed via co-deposition, and that the mobile metal is diffused to a surface of the cermet or ceramic film formed by the co-deposition. As mentioned above, Applicants have also specified in claim 1 that the co-deposited metal is the source of the mobile metal.

Furthermore, claim 1 recites that "causing" results in **the diffusion of the mobile metal to a surface** of the cermet or ceramic film. As such, it is submitted that claim 1 clearly recites that the mobile metal is moving out of the respective film to a surface thereof. This is also supported by Figs. 1, 2, 3A and 3B as filed, which illustrate the metal 12 within the film 18, 18' and then at the surface 36, 36' of the porous film 20, 20'.

Appln. S.N. 10/691,199
Amdt. dated February 28, 2007
Reply to Office Action of November 30, 2006
Docket No. 100204895-1

12

In light of the amendment to claim 1 and the arguments set forth herein, Applicants submit that the rejection of claim 1 under 35 U.S.C. § 112, second paragraph is traversed and overcome, and withdrawal of the same is respectfully requested.

35 U.S.C. § 112, second paragraph rejection of Claims 3, 8, and 11-12

Regarding claims 3, 8, 11 and 12, the Examiner states that the term "the metal" lacks antecedent basis and/or is confusing as to which metal is being referred to in claim 1.

Again, although Applicants do not acquiesce to the Examiner's rejection, Applicants submit that the amendment to claim 1 clarifies that the metal being referred to in claims 3, 8, 11 and 12 is the co-deposited metal. As such, Applicants submit that the rejection of claims 3, 8, 11 and 12 under 35 U.S.C. § 112, second paragraph is traversed and overcome, and withdrawal of the same is respectfully requested.

35 U.S.C. § 112, second paragraph rejection of Claim 10

The Examiner states that in claim 10 the phrase "the gold agglomerates" lacks antecedent basis.

Applicants respectfully disagree with the Examiner. The word "agglomerates" as used in claim 10 is a transition verb, which means to "heap up, join...gather into a ball, mass, or cluster" (see <http://www.webster.com/dictionary/agglomerate>). Applicants are not using the word "agglomerates" as a noun. It is submitted that there is proper antecedent basis for the term "gold" as used in claim 10. As such, the Applicants assert that the rejection of claim 10 based upon 35 U.S.C. § 112, second paragraph is erroneously based, and withdrawal of the same is requested.

Appln. S.N. 10/691,199
Amdt. dated February 28, 2007
Reply to Office Action of November 30, 2006
Docket No. 100204895-1

13

35 U.S.C. § 112, second paragraph rejection of Claim 15

The Examiner states that the phrase "further comprises the step of subjecting the ceramic film...to render a porous cermet film" is vague and confusing because independent claim 1 requires the diffusion of the metal to produce a porous film.

Applicants do not acquiesce to the Examiner's conclusion and respectfully submit that these recitations are neither vague nor confusing. However, in order to expedite prosecution and to aid in the Examiner's understanding of the claim, the Applicants have amended claim 15 to recite that the annealing (i.e., the causing step as defined in claim 12 from which claim 15 depends) results in the formation of a porous **ceramic** film, and that the additional reduction step renders the porous **cermet** film. Support for these recitations may be found throughout the specification as filed, at least at page 10, lines 9-25.

As such, Applicants submit that the rejection of claim 15 under 35 U.S.C. § 112, second paragraph is traversed and overcome, and withdrawal of the same is respectfully requested.

35 U.S.C. § 112, second paragraph rejection of Claim 21

The Examiner states that in claim 21 the phrases "the metal reduces" and "wherein at least a portion of the metal diffuses to a surface of the at least one of the cermet film and the ceramic film" are vague and confusing.

Applicants again respectfully disagree with the Examiner. Claim 21 recites "a metal" that is co-deposited with a ceramic to form a cermet film and/or a ceramic film. The metal that is reduced is the co-deposited metal. Applicants submit that the language of claim 21 is neither vague nor confusing, in part because one metal is referred to throughout the claim.

Furthermore, claim 21 recites that **the metal diffuses to a surface of the film**. It is submitted that this language clearly illustrates that the mobile metal is moving out of

Appl. S.N. 10/691,199
Amdt. dated February 28, 2007
Reply to Office Action of November 30, 2006
Docket No. 100204895-1

14

the respective film to a surface thereof. This is also supported by Figs. 1, 2, 3A and 3B as filed, which illustrate the metal 12 within the film 18, 18' and then at the surface 36, 36' of the porous film 20, 20'.

As such, the Applicants assert that the rejection of claim 10 based upon 35 U.S.C. § 112, second paragraph is erroneously based, and withdrawal of the same is requested.

35 U.S.C. § 112, second paragraph rejection of Claim 22

Regarding claim 22, the Examiner states that the term "the metal" lacks antecedent basis and/or is confusing as to which metal is being referred to in claim 21.

Applicants again point out that claim 21 refers to one metal throughout the claim. As such, the metal recited in claim 22 is that metal. Applicants submit that the rejection of claim 22 under 35 U.S.C. § 112, second paragraph is erroneously based, and withdrawal of the same is requested.

35 U.S.C. § 112, second paragraph rejection of Claim 32

The Examiner states that in claim 32 "highly mobile" is a relative term that renders the claim indefinite. The Examiner goes on to state that highly is not defined by the claim, and that the specification does not provide a standard for ascertaining the requisite degree, and that one skilled in the art would not be reasonably apprised of the scope of the invention. The Examiner also says the phrase "wherein the highly mobile metal diffuses to and agglomerates on the cermet film surface", as recited in claim 32, is vague and confusing. The Examiner questions whether the metal is moving into or out of the material.

Applicants respectfully disagree with the Examiner's assertions regarding claim 32. It is submitted that the specification as filed does provide a standard for ascertaining the meaning of the term "highly mobile." The Examiner's attention is drawn to the Applicants' specification as filed at page 6, lines 17-26, which states:

Appl. S.N. 10/691,199
Amdt. dated February 28, 2007
Reply to Office Action of November 30, 2006
Docket No. 100204895-1

15

A mobile metal is designated schematically as M (in Fig. 2 and 3B). In general, all metals are mobile. Their mobility is generally proportional to the temperature, i.e. the higher the temperature, the higher the mobility. The effect of this mobility is advantageously utilized in embodiments of the methods for forming porous films of the present invention. The Tamman temperature, T_{Tamman} , is the temperature at about which the metals become significantly more mobile. T_{Tamman} is defined as 0.5 of the metal melting temperature in K. For gold, which has a melting temperature of 1064°C, T_{Tamman} would be: $(1064+273)/2 - 273 = \sim 396^{\circ}\text{C}$. So, at temperatures above about 400°C, a significant mobility of gold in thin films may be expected.

From this description, it is submitted that one skilled in the art could readily determine the mobility of the desirable metal to be co-deposited.

Since the cermet film is formed to have the highly mobile metal therein, and the highly mobile metal diffuses to and agglomerates on the cermet film surface, it is submitted claim 32 is clear that the mobile metal is moving out of the cermet film to a surface thereof.

As such, the Applicants assert that the rejection of claim 32 based upon 35 U.S.C. § 112, second paragraph is erroneously based, and withdrawal of the same is requested.

35 U.S.C. § 112, second paragraph rejection of Claim 44

The Examiner states that in claim 44 the phrases "reducing a metal within at least one of a cermet film and a ceramic film" and "causing the metal to diffuse to at least one of a surface of the cermet film and a surface of the ceramic film" are vague and confusing.

While the Applicants again do not acquiesce to the Examiner's rejection, in order to expedite prosecution, they have amended claim 44 to further clarify that "the at least one metal-containing material contains the metal." Amended claim 44 recites that the cermet and/or ceramic film is formed by depositing at least one metal-containing material (which contains the metal) on a substrate. The amended claim language

Appl. S.N. 10/691,199
Amdt. dated February 28, 2007
Reply to Office Action of November 30, 2006
Docket No. 100204895-1

16

clearly sets forth that the metal within the cermet and/or ceramic film that is reduced comes from the at least one metal-containing material that is deposited to form the respective film(s).

As previously stated, claim 44 recites that the metal is within the cermet and/or ceramic film. The claim also recites that **the metal diffuses to a surface of the respective film**. It is submitted that this language clearly illustrates that the metal is moving from within the respective film to a surface thereof. This is also supported by Figs. 1, 2, 3A and 3B as filed, which illustrate the metal 12 within the film 18, 18' and then at the surface 36, 36' of the porous film 20, 20'.

As such, the Applicants assert that the rejection of claim 44 based upon 35 U.S.C. § 112, second paragraph is erroneously based, and withdrawal of the same is requested.

For all the reasons stated above, it is submitted that the rejection of claims 1-33 and 44-46 under 35 U.S.C. § 112, second paragraph are traversed and overcome.

In summary, claims 1-33 and 44-46 remain in the application. It is submitted that, through this Amendment, Applicants' invention as set forth in these claims is now in a condition suitable for allowance.

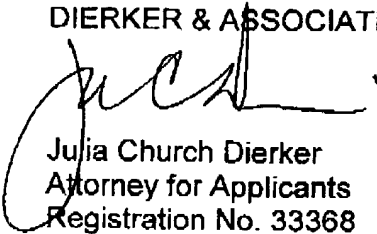
Appln. S.N. 10/691,199
Amdt. dated February 28, 2007
Reply to Office Action of November 30, 2006
Docket No. 100204895-1

17

Further and favorable consideration is requested. If the Examiner believes it would expedite prosecution of the above-identified application, he is cordially invited to contact Applicants' Attorney at the below-listed telephone number.

Respectfully submitted,

DIERKER & ASSOCIATES, P.C.



Julia Church Dierker
Attorney for Applicants
Registration No. 33368
(248) 649-9900, ext. 25
juliad@troypatent.com

3331 West Big Beaver Rd., Suite 109
Troy, Michigan 48084-2813
Dated: February 28, 2007
JCD/JRK/hmp